



A.D. 1854 N° 1634.

S P E C I F I C A T I O N

OF

WILLIAM STEPHENS GARLAND
AND
JOSIAH GLASSON.

CONSUMING SMOKE IN FURNACES.

L O N D O N :

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1855.



A.D. 1854 N° 1634.

Consuming Smoke in Furnaces.

LETTERS PATENT to William Stephens Garland and Josiah Glasson, both of Soho Foundry, in the County of Stafford, Engineers and Boiler Makers, for the Invention of “**A MEANS OF CONSUMING SMOKE IN FURNACES.**”

Sealed the 16th January 1855, and dated the 25th July 1854.

PROVISIONAL SPECIFICATION left by the said William Stephens Garland and Josiah Glasson at the Office of the Commissioners of Patents, with their Petition, on the 25th July 1854.

We, **WILLIAM STEPHENS GARLAND** and **JOSIAH GLASSON**, both of Soho
5 Foundry, in the County of Stafford, Engineers and Boiler Makers, do hereby
declare the nature of the said Invention for “**A MEANS OF CONSUMING SMOKE
IN FURNACES**” to be as follows:—

Our Invention consists in constructing furnaces with hollow fire bars or tubes
open at both ends for the admission of air into the furnace, through or at or
10 near the back of the fire bridge, so as to effect the consumption of smoke.

Garland & Glasson's Improvements in Consuming Smoke in Furnaces.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said William Stephens Garland and Josiah Glasson in the Great Seal Patent Office on the 25th January 1855.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we, **WILLIAM STEPHENS GARLAND** and **JOSIAH GLASSON**, both of Soho Foundry, in the 5 County of Stafford, Engineers and Boiler Makers, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-fifth day of July, in the year of our Lord One thousand eight hundred and fifty-four, in the eighteenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto us, the said 10 William Stephens Garland and Josiah Glasson, Her special licence that we, the said William Stephens Garland and Josiah Glasson, our executors, administrators, and assigns, or such others as we, the said William Stephens Garland and Josiah Glasson, our executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during 15 the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**A MEANS OF CONSUMING SMOKE IN FURNACES**," upon the condition (amongst others) that we, the said William Stephens Garland and Josiah Glasson, or one of us, by an instrument in 20 writing under our hands and seals, or under the hand and seal of one of us, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent. 25

NOW KNOW YE, that we, the said William Stephens Garland and Josiah Glasson, do hereby declare the nature of our said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, reference being had to the Drawings hereunto annexed (that is to say):— 30

Our Invention is applicable to the furnaces of steam boilers, to air and annealing furnaces, and to the furnaces of brewery coppers, bakers' and other ovens, and consists in the employment of hollow fire or grate bars formed of cast iron, wrought iron, or other suitable materials for the admission of air, having a bend at the back end thereof to form the bridge, for the purpose of 35 more effectually burning or consuming smoke and saving fuel.

Figure 1 of the Drawings hereunto annexed is a sectional elevation of a boiler for land purposes, generally known as the Cornish boiler; and Figure 2

FIG. 1.

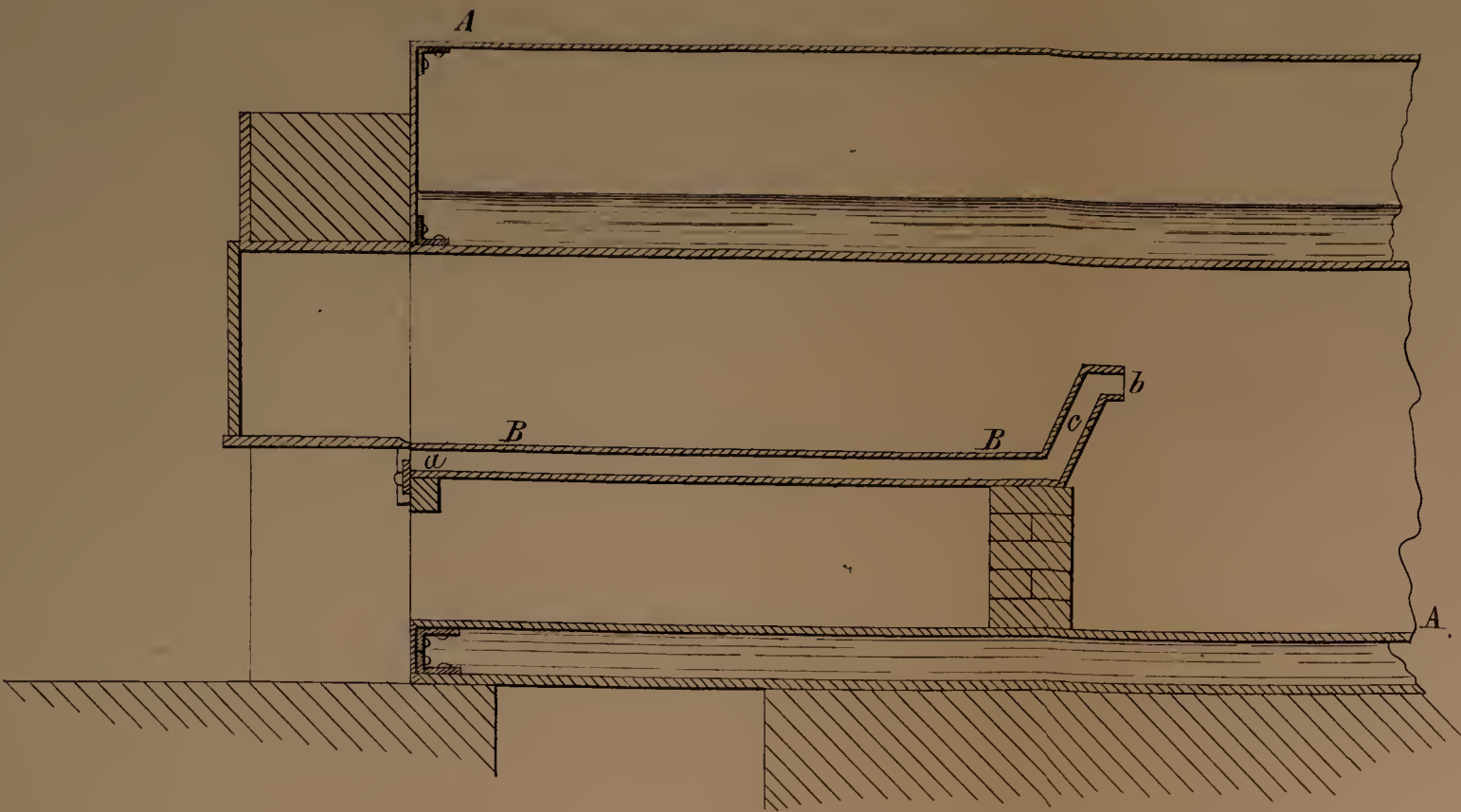


FIG. 2.

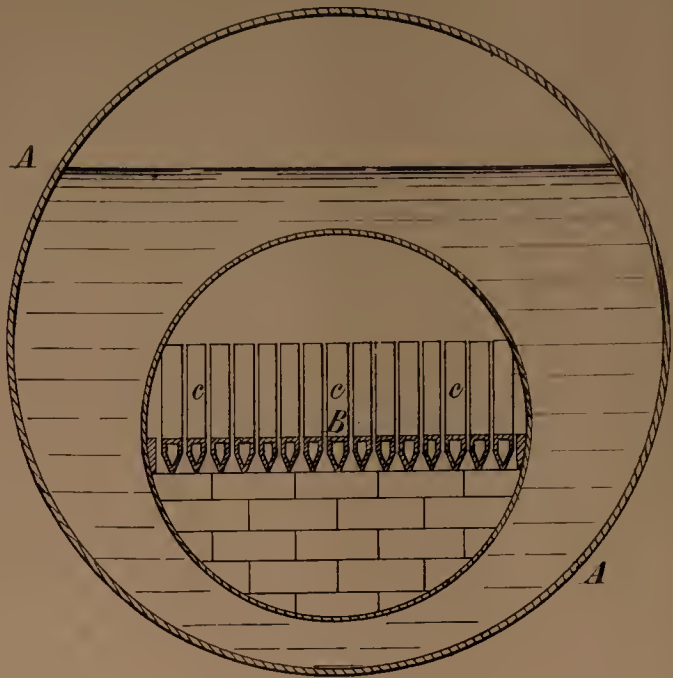


FIG. 3.

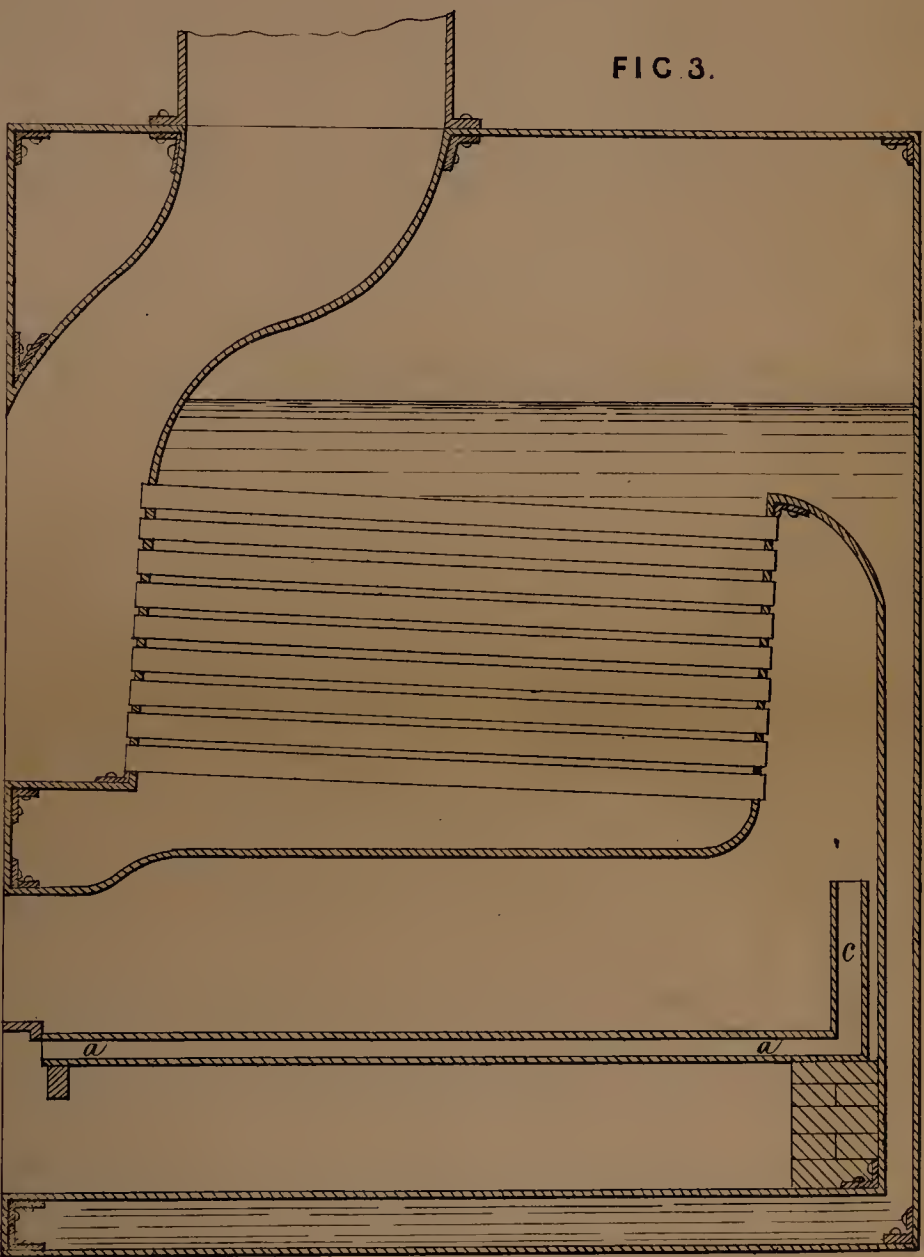


FIG. 4.

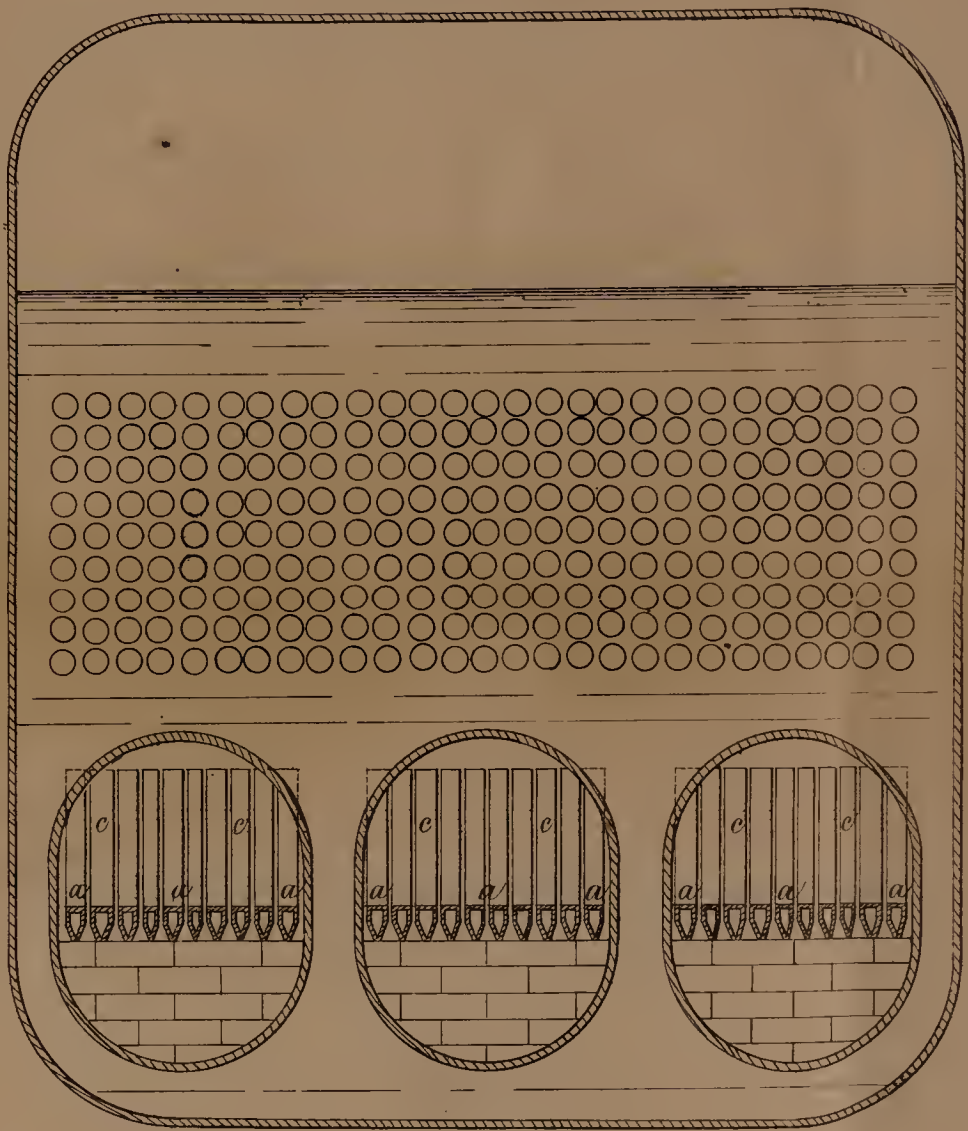


FIG. 5.

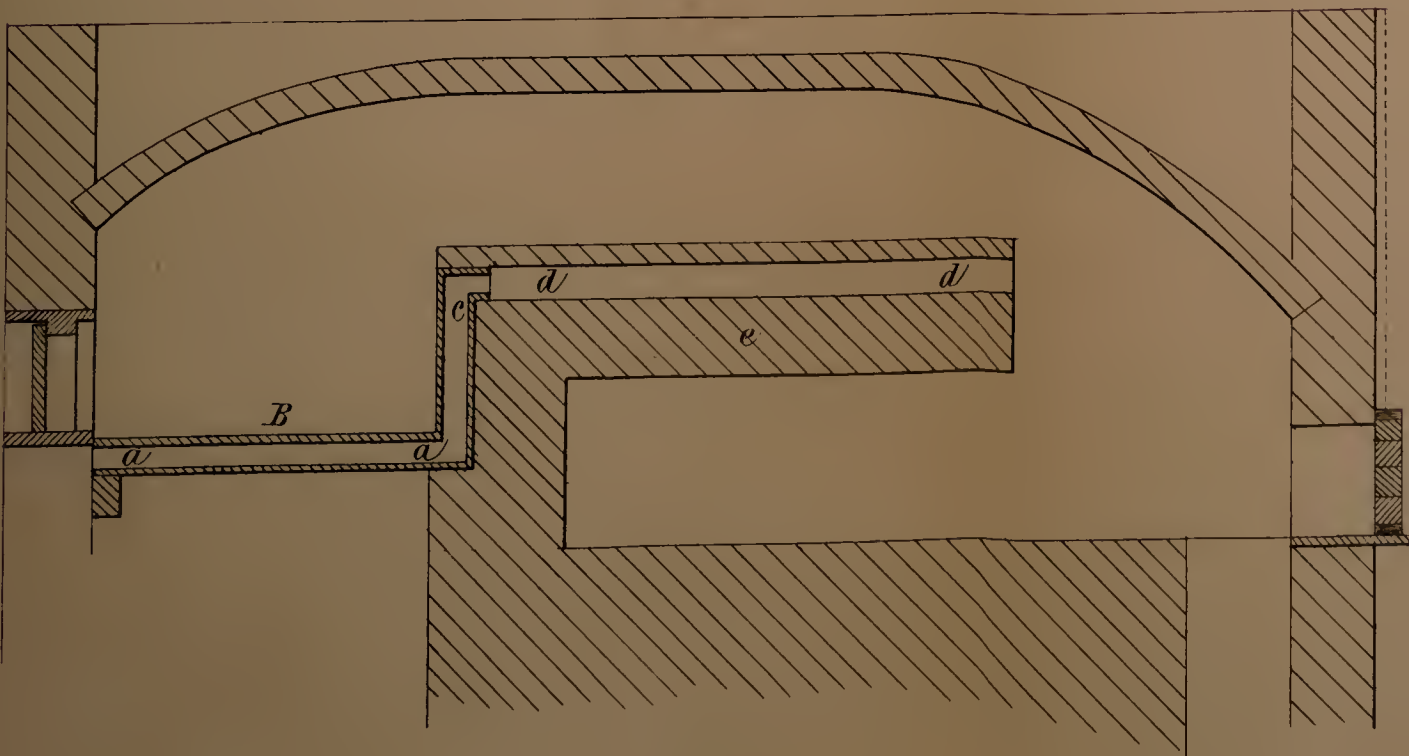
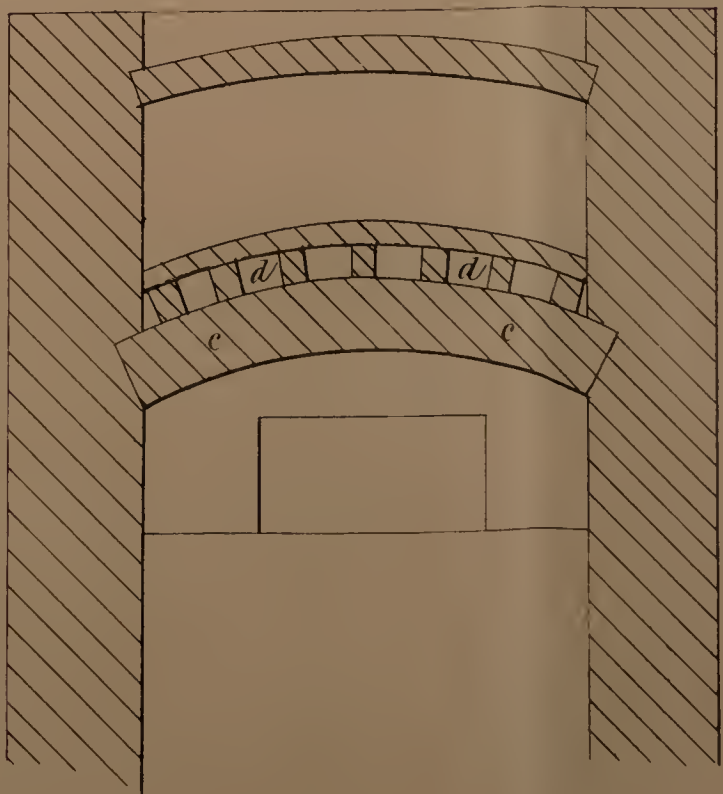


FIG. 6.



Garland & Glasson's Improvements in Consuming Smoke in Furnaces.

is a transverse section of the same, shewing our Invention applied thereto. A is the boiler; and B, the grate, which is formed of hollow bars, of the form shewn; the air passes through them from *a* to *b*, and the bends *c, c, c*, form the bridge. Figure 3 is a longitudinal section of a marine tubular boiler, to
5 which our Invention is applied; and Figure 4 is a transverse section of the same. The improved hollow bars are represented in these Figures by the letters *a, a, a, a*, and the bends forming the bridges by *c, c, c, c*. Figures 5 and 6 shew the application of the hollow bars to a muffle, air, or annealing furnace, and, in addition to the hollow bars, an air passage *d, d*, is formed upon
10 the counter arch *e, e*, to convey the heated air to the end of the furnace.

In this construction of furnaces, both for steam boilers, brewery coppers, air or annealing furnaces, and muffles, or ovens, as described above, more perfect combustion is obtained, smoke is burned or consumed, and a considerable saving of fuel is effected. In boilers which have a strong draft, a slide *f*, shewn in
15 Figure 1, is fixed in front of the fire bars, to regulate the admission of air through them. Hollow bars, such as are shewn in the Drawing, are also more durable than the common or solid bars, as the current of air passing through them renders them less liable to burn or twist.

And having now described the nature of our said Invention, and in what
20 manner the same is to be performed, we declare that what we claim is, the employment in furnaces of hollow fire or grate bars having a bend at the back end thereof to form the bridge, whereby air is admitted to such furnaces, and the consumption or prevention of smoke is effected.

In witness whereof, we, the said William Stephens Garland and Josiah
20 Glasson, have hereunto set our hands and seals, this Nineteenth day of January, One thousand eight hundred and fifty-five.

WILLIAM STEPHENS GARLAND. (L.S.)

JOSIAH GLASSON. (L.S.)

LONDON:

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Printers to the Queen's most Excellent Majesty. 1855.

